

# Spot Safety Project Evaluation

Spot Safety Project # 02-02-264

**Spot Safety Project Evaluation of the Addition of Left-Turn Lanes on US 13 - 258  
US 13 – 258 at NC 123 and SR 1301 (Vandiford-Thomas Road)  
Greene County**

Documents Prepared By:  
Stantec Consulting Services Inc.  
for  
Safety Evaluation Group  
Traffic Safety Systems Management Section  
Transportation Mobility and Safety Division  
North Carolina Department of Transportation

**Principal Investigator**



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Elizabeth S. Scott  
Transportation Designer

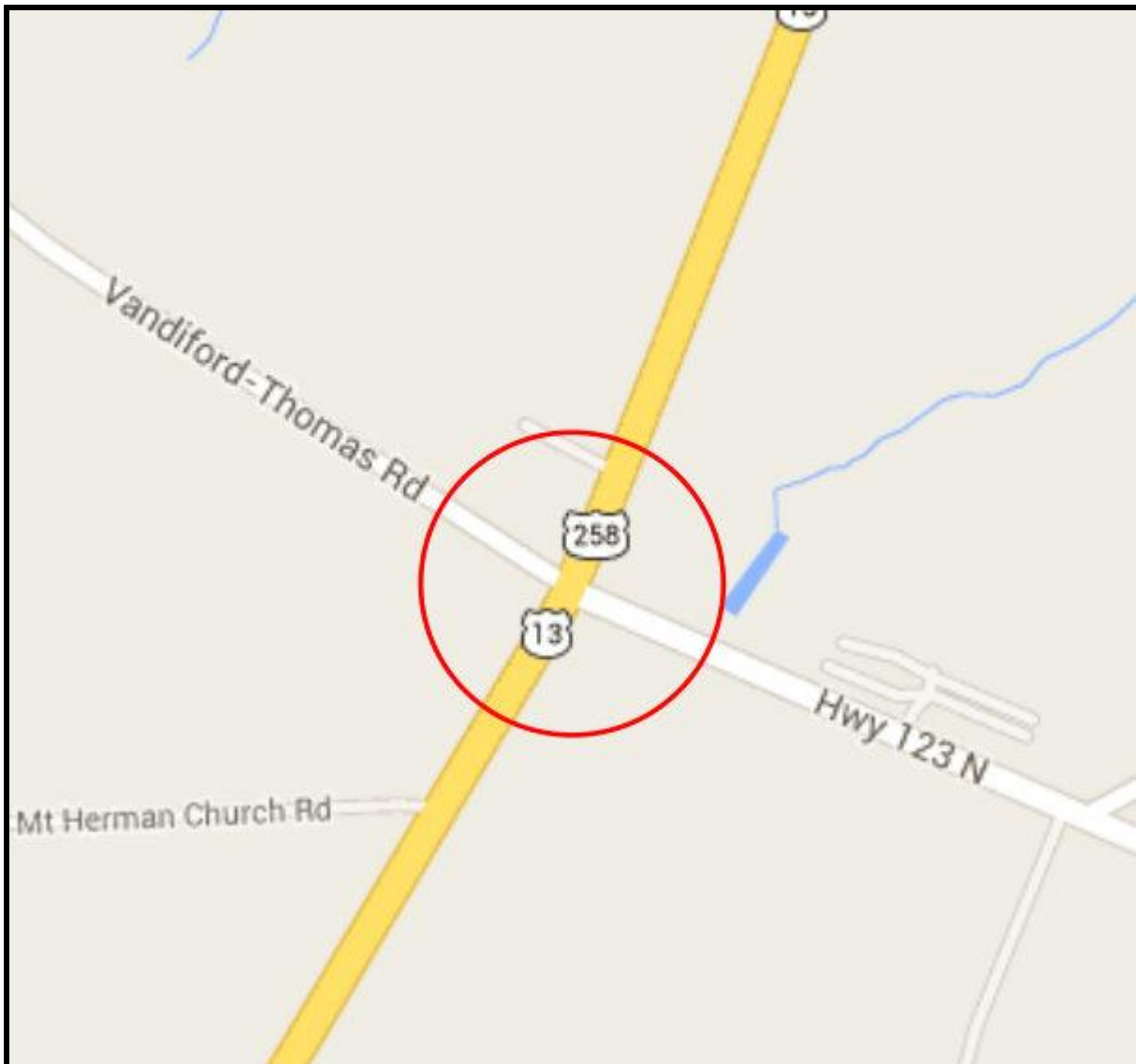
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Date

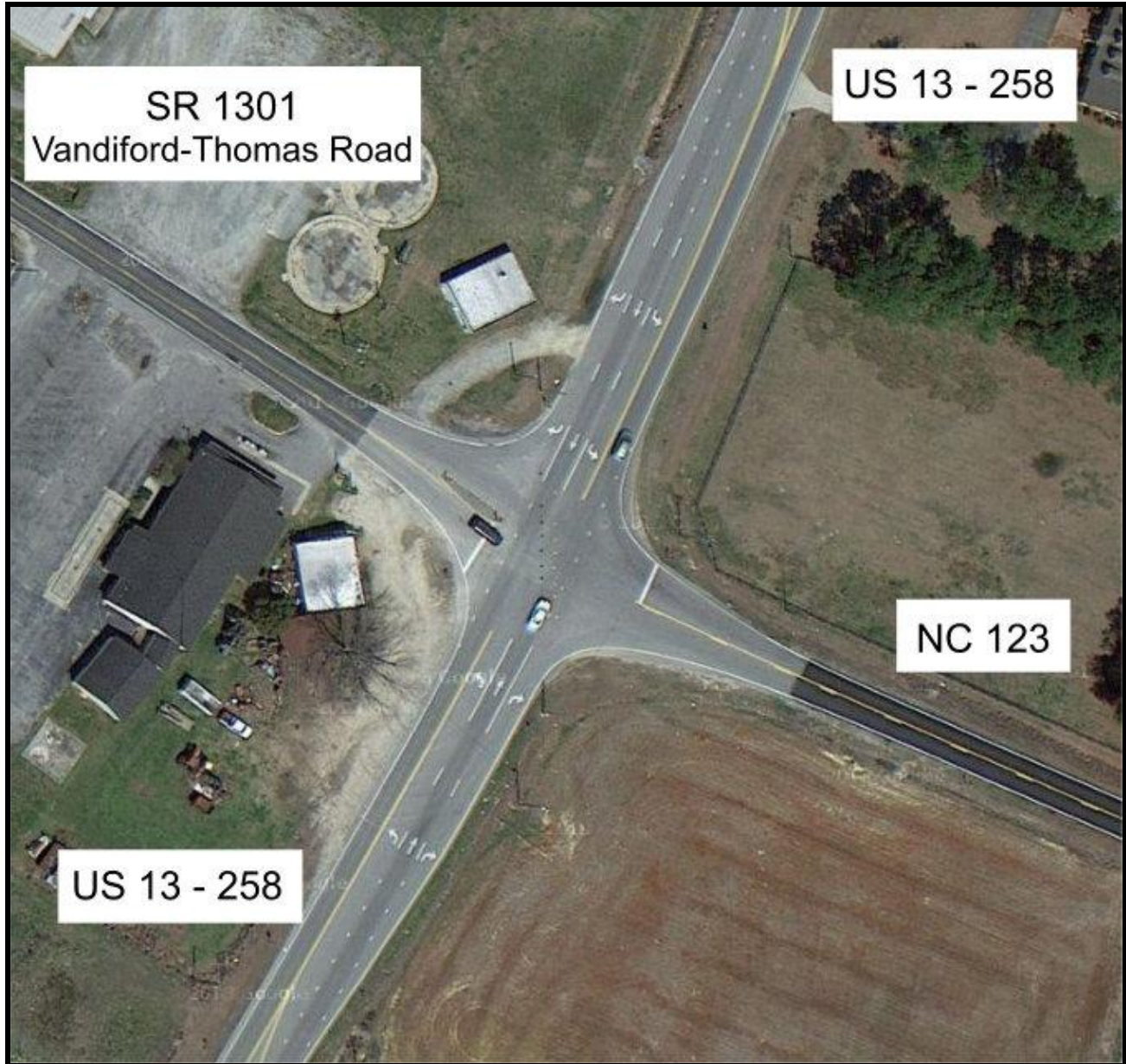
## *Spot Safety Project Evaluation Documentation*

### **Subject Location**

Evaluation of Spot Safety Project Number 02-02-264 located at the Intersection of US 13 – 258 at NC 123 and SR 1301 (Vandiford-Thomas Road) in Greene County.

This intersection is stop-controlled with flashers.





Aerial Provided from Google Maps

### **Project Information and Background from the Project File Folder**

The spot safety project improvement countermeasure chosen for the subject location was the addition of left turn lanes on US 13 – 258.

US 13 – 258, NC 123, and SR 1301 (Vandiford-Thomas Road) are 2-lane facilities in the vicinity of the study location. US 13 – 258 widens for right turn lanes at the intersection. The speed limit on US 13 – 258, NC 123, and SR 1301 (Vandiford-Thomas Road) is 45-mph. The subject location is a four-leg intersection, which is stop-controlled including a flasher in the center at NC 123 and SR 1301 (Vandiford-Thomas Road).

The original statement of problem was that the lack of left turn lanes on US 13 – 258 had resulted in rear-end and left turn crashes. The initial crash analysis was completed from September 1, 1999 to August 31, 2002 with eleven (11) reported crashes. The final completion date for the improvement at the subject intersection was on February 4, 2008 with a total cost of \$250,000.00.

**Naive Before and After Analysis**

After reviewing the spot safety project file folder along with the crash at the subject location, the crash data omitted from this analysis to consider for an adequate construction period were the months of November 2007 through February 2008. The before period consisted of reported crashes from June 1, 2002 through October 31, 2007 (5 years, 5 months); and the after period consisted of reported crashes from March 1, 2008 through July 31, 2013 (5 years, 5 months). The ending date for this analysis was determined by the date of available crash data at the time of analysis.

The treatment data consisted of all crashes within 150 feet of the subject intersection for the US 13 – 258, NC 123, and SR 1301 (Vandiford-Thomas Road) approaches. *Please see attached location map and aerial map for further details.*

The following data table depicts the Naive Before and After Analysis for the treatment location. Please note that Rear End Crashes were the target crashes for the applied countermeasure.

<u>Treatment Information</u>	<b>Before</b>	<b>After</b>	<b>Percent Reduction (-) Percent Increase (+)</b>
Total Crashes	11	4	- 63.6 %
Total Severity Index	11.25	4.7	- 58.2 %
Target Crashes	3	0	-100.0 %
Target Crash Severity Index	5.9	0	-100.0 %
Volume (2005, 2010)	10,300	8,700	- 15.5 %

<u>Injury Crash Summary</u>	<b>Before</b>	<b>After</b>	<b>Percent Reduction (-) Percent Increase (+)</b>
Fatal injury Crashes	1	0	-100.0 %
Class A injury Crashes	0	0	N/A
Class B injury Crashes	1	2	+100.0 %
Class C Injury Crashes	4	0	-100.0 %
Property Damage Only	5	2	- 60.0 %

The naive before and after analysis at the treatment location resulted in a 63.6 percent decrease in Total Crashes and a 58.2 percent decrease in the Total Severity Index. The before period ADT year was 2005 and the after period ADT year was 2010.

To further analyze the intersection crash patterns, the following chart shows different traffic movements and the change in crash totals through the study:

<u>Additional Information</u>	<b>Before</b>	<b>After</b>	<b>Percent Reduction (-) Percent Increase (+)</b>
Angle Crashes	3	3	0.00
Left turn, Different Roadway Crashes	2	1	- 50.0 %

## **Results and Discussion**

Referencing the *Collision Diagrams*, there were three (3) target crashes in the before period. There were no target crashes in the after. The target severity index decreased from 5.9 to 0, as there were no target crashes in the after period.

All three (3) of the target crashes in the before period were rear end crashes. These crashes occurred on the southbound leg of the intersection. There were no target crashes on the northbound leg of US 13 – 258 in the before period.

From the additional information chart above, the number of angle crashes remained the same from the before period to the after period. Additionally, left turn, different roadway crashes were reduced from two (2) to one (1) from the before period to the after. Two (2) of angle crashes and the one (1) left turn, different roadway crashes from the after period, all included a southbound through vehicle on US 13 – 258.

In the before period, the fatal crash was a left turn, different roadway. There were no fatalities in the after period. However, the Injury B crashes increased from one (1) in the before period to two (2) in the after. Injury C crashes were reduced from four (4) to zero (0).

Please see the attached *Treatment Site Photos*. Photos are provided from Google Street View for all three approaches to the treatment intersection. As the Safety Evaluation Group completes additional spot safety reviews for this type of countermeasure, we will be able to provide objective and definite information regarding actual crash reduction factors for this type of intersection.

**Treatment Site Photos from Google Earth**



**Google Maps (May 2012) – Looking North US 13 - 258 Approach**



**Google Maps (May 2012) – Looking South from US 13 – 258 Approach**



**Google Maps (May 2012) – Looking West from NC 123 Approach**



**Google Maps (May 2012) – Looking East from SR 1301 (Vandiford-Thomas Road) Approach**

SS# 02-02-264  
 Greene County  
 Before Period  
 6/1/02 - 10/31/07

LEGEND							
	MOVING VEHICLE		ANGLE		9 MPH OR LESS		A ANIMAL
	PARKED VEHICLE		10 MPH TO 19		P PEDESTRIAN		B BICYCLE
	PARKING VEHICLE		20 MPH TO 29		T TRAIN		* DRIVER AT FAULT
	MOVABLE OBJECT		30 MPH TO 39		D DRY		W WET
	HEAD ON		40 MPH TO 49		I ICY OR SNOWY		O Other
	REAR END		50 MPH TO 59		SPEED UNKNOWN		
	RAN OFF ROAD		60 MPH TO 69				
	DAYLIGHT CRASH		70 AND UP				
	NIGHT CRASH		80 AND UP				
			90 AND UP				
			100 AND UP				

ADT (Year)  
720 (2005)

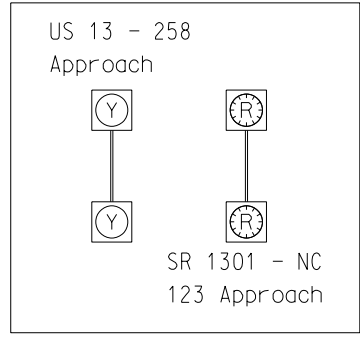
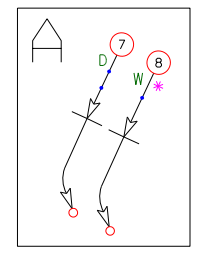
SR 1301 (Vandiford-Thomas Rd)

45 mph

ADT (Year)  
9,500 (2005)

45 mph

US 13 - US 258



NC 123

45 mph

ADT (Year)  
2,300 (2005)

ADT (Year)  
8,000 (2005)

45 mph US 13 - US 258

Target Crashes

N.C. DEPARTMENT of TRANSPORTATION  
 DIVISION of HIGHWAYS  
 TRANSPORTATION MOBILITY and  
 SAFETY DIVISION

Date: 9/25/2013

Prepared By: KRG



**Stantec**  
 Stantec Consulting Services Inc.  
 801 Jones Franklin Road  
 Suite 300  
 Raleigh, NC 27606  
 Tel: (919) 851-6866  
 Fax: (919) 851-7024  
 www.stantec.com  
 License No. F-0672



SR 1301 (Vandiford-Thomas Rd)  
 ADT (Year)  
 740 (2010)

SS# 02-02-264  
 Greene County  
 After Period  
 3/1/08 - 7/31/13

ADT (Year)  
 8,100 (2010)  
 45 mph  
 US 13 - US 258

45 mph

US 13 - US 258  
 45 mph

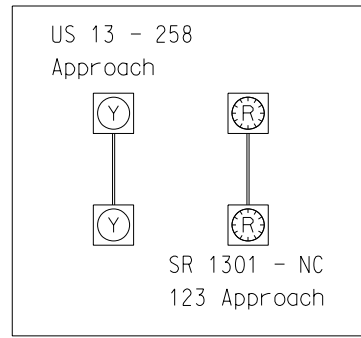
ADT (Year)  
 6,400 (2010)

ADT (Year)  
 2,100 (2010)

NC 123  
 45 mph

LEGEND			
	MOVING VEHICLE		ANGLE
	PARKED VEHICLE		TURNING
	PARKING VEHICLE		BACKING
	MOVABLE OBJECT		SIDESWIPE
	HEAD ON		INJURY
	REAR END		FATALITY
	RAN OFF ROAD		9 MPH OR LESS
	DAYLIGHT CRASH		10 MPH TO 19
	NIGHT CRASH		20 MPH TO 29
			30 MPH TO 39
			40 MPH TO 49
			50 MPH TO 59
			60 MPH TO 69
			70 AND UP
			SPEED UNKNOWN
			A ANIMAL
			P PEDESTRIAN
			B BICYCLE
			T TRAIN
			* DRIVER AT FAULT
			D DRY
			W WET
			I ICY OR SNOWY
			O Other

NOTE Crash 3:  
 Vehicle Traveled Off the Roadway  
 to Avoid a Collision with a Vehicle  
 that Pulled from the Intersection



Target Crashes

N.C. DEPARTMENT of TRANSPORTATION  
 DIVISION of HIGHWAYS  
 TRANSPORTATION MOBILITY and  
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